

In the Claims:

Please cancel claim 31. Please amend claims 1 and 16. Please add new claim 32. The claims are as follows:

1. (Currently amended) A method for reducing a number of shapes, said method comprising the steps of:

forming a first shape pattern;

forming a second shape pattern, wherein the second shape pattern consists of all of the first shape pattern and error shapes;

extracting the error shapes from the second shape pattern;

deriving from a subset of the extracted error shapes at least one environment shape corresponding to each error shape in the subset of the error shapes, said environment shape reflecting a local geometric environment of its corresponding error shape; and

deleting a subset of the environment shapes such that only a plurality of unique environment shapes satisfying a selection criterion remain subject to the remaining unique environment shapes differing from each other with respect to a geometrical characteristic of their respective geometric shapes.

2. (Canceled)

3. (Previously presented) The method of claim 1, said method further comprising distributing the error shapes into at least one group such that the at least one group is defined by a grouping

criterion, wherein the subset of the error shapes is a first group of the at least one group, and wherein the at least one group consists of a plurality of groups.

4. (Original) The method of claim 3, wherein the grouping criterion relates to a combination of an area of the error shape and a smallest linear dimension of the error shape.

5. (Original) The method of claim 1, wherein the deriving step comprises:
expanding each error shape in the subset to form a corresponding expanded shape; and
forming the at least one environment shape corresponding to each expanded shape by
removing all portions of the expanded shape which are common to the second shape pattern.

6. (Original) The method of claim 5, wherein each error shape in the subset has a polygonal shape, and wherein expanding the first error shape comprises outwardly projecting each bounding side of the error shape by a distance in a direction perpendicular to the bounding side.

7. (Original) The method of claim 6, wherein the distance is a same distance for each bounding side of a first error shape of the error shapes in the subset.

8. (Original) The method of claim 7, wherein the same distance is identical for each error shape in the subset.

9. (Original) The method of claim 6, wherein the distance is a same first distance for each

bounding side oriented in a first direction for a first error shape of the error shapes in the subset, wherein the distance is a same second distance for each bounding side oriented in a second direction for the first error shape, wherein the second direction is orthogonal to the first direction, and wherein the same first distance is unequal to the same second distance.

10. (Original) The method of claim 9, wherein the same first distance is identical for each error shape in the subset, and wherein the same second distance is identical for each error shape in the subset.

11. (Original) The method of claim 1, wherein the selection criterion relates to N independent characteristics of each environment shape such that N is at least 1, and wherein the deleting step includes sorting the environment shapes in accordance with N sort keys such that the N sort keys are the N independent characteristics.

12. (Original) The method of claim 11, wherein each environment shape is polygonal, wherein N is at least 2, and wherein the N independent characteristics comprise at least two of: the vertex count of the environment shape, the area of the environment shape, and a perimeter of the environmental shape.

13. (Original) The method of claim 1, wherein the extracting step comprises performing: (first shape pattern) XOR (second shape pattern).

14. (Previously presented) The method of claim 1, wherein the error shapes comprises a plurality of additive shapes and a plurality of subtractive shapes, and wherein each subtractive shape is a void created by having shifted a portion of the first shape pattern in a direction.

15. (Previously presented) The method of claim 1, wherein the prior to the step of forming a first shape pattern the method further comprises providing a base geometry having at least one initial geometric shape, wherein the step of forming a first shape pattern comprises adding at least one anchor to the at least one initial geometric shape such that the first shape pattern so formed includes the at least one initial geometric shape and the at least one anchor so added, wherein a first anchor of the at least one anchor of the first shape pattern comprises an extension and a flare, wherein the extension extends a first portion of the at least one initial geometric shape in a first direction along which the at least one initial geometric shape is oriented, and wherein each flare extends the first portion in a second direction that is perpendicular to the first direction.

16. (Currently amended) A computer program product, comprising a computer usable medium having a computer readable program code embodied therein, said computer readable program code adapted to perform a method for reducing a number of shapes, said method comprising the steps of:

forming a first shape pattern;

forming a second shape pattern, wherein the second shape pattern consists of all of the first shape pattern and error shapes;

extracting the error shapes from the second shape pattern;

deriving from a subset of the extracted error shapes at least one environment shape corresponding to each error shape in the subset of the error shapes, said environment shape reflecting a local geometric environment of its corresponding error shape; and

deleting a subset of the environment shapes such that only a plurality of unique environment shapes satisfying a selection criterion remain subject to the remaining unique environment shapes differing from each other with respect to a geometrical characteristic of their respective geometric shapes.

17. (Canceled).

18. (Previously presented) The computer program product of claim 16, said method further comprising distributing the error shapes into at least one group such that the at least one group is defined by a grouping criterion, wherein the subset of the error shapes is a first group of the at least one group, and wherein the at least one group consists of a plurality of groups.

19. (Original) The computer program product of claim 18, wherein the grouping criterion relates to a combination of an area of the error shape and a smallest linear dimension of the error shape.

20. (Original) The computer program product of claim 16, wherein the deriving step comprises:

expanding each error shape in the subset to form a corresponding expanded shape; and

forming the at least one environment shape corresponding to each expanded shape by removing all portions of the expanded shape which are common to the second shape pattern.

21. (Original) The computer program product of claim 20, wherein each error shape in the subset has a polygonal shape, and wherein expanding the first error shape comprises outwardly projecting each bounding side of the error shape by a distance in a direction perpendicular to the bounding side.

22. (Original) The computer program product of claim 21, wherein the distance is a same distance for each bounding side of a first error shape of the error shapes in the subset.

23. (Original) The computer program product of claim 22, wherein the same distance is identical for each error shape in the subset.

24. (Original) The computer program product of claim 21, wherein the distance is a same first distance for each bounding side oriented in a first direction for a first error shape of the error shapes in the subset, wherein the distance is a same second distance for each bounding side oriented in a second direction for the first error shape, wherein the second direction is orthogonal to the first direction, and wherein the same first distance is unequal to the same second distance.

25. (Original) The computer program product of claim 24, wherein the same first distance is identical for each error shape in the subset, and wherein the same second distance is identical for each error shape in the subset.

26. (Original) The computer program product of claim 16, wherein the selection criterion relates

to N independent characteristics of each environment shape such that N is at least 1, and wherein the deleting step includes sorting the environment shapes in accordance with N sort keys such that the N sort keys are the N independent characteristics.

27. (Original) The computer program product of claim 26, wherein each environment shape is polygonal, wherein N is at least 2, and wherein the N independent characteristics comprise at least two of: the vertex count of the environment shape, the area of the environment shape, and a perimeter of the environmental shape.

28. (Original) The computer program product of claim 16, wherein the extracting step comprises performing: (first shape pattern) XOR (second shape pattern).

29. (Previously presented) The computer program product of claim 16, wherein the error shapes comprises a plurality of additive shapes and a plurality of subtractive shapes, and wherein each subtractive shape is a void created by having shifted a portion of the first shape pattern in a direction.

30. (Previously presented) The computer program product of claim 16, wherein the prior to the step of forming a first shape pattern the method further comprises providing a base geometry having at least one initial geometric shape, wherein the step of forming a first shape pattern comprises adding at least one anchor to the at least one initial geometric shape such that the first shape pattern so formed includes the at least one initial geometric shape and the at least one

anchor so added, wherein a first anchor of the at least one anchor of the first shape pattern comprises an extension and a flare, wherein the extension extends a first portion of the at least one initial geometric shape in a first direction along which the at least one initial geometric shape is oriented, and wherein each flare extends the first portion in a second direction that is perpendicular to the first direction.

31. (Cancelled)

32. (New) A method for reducing a number of shapes, said method comprising the steps of:
providing a base geometry in a two-dimensional rectangular coordinate system, said base geometry having at least one initial geometric shape;
adding at least one anchor to the at least one initial geometric shape to form a first shape pattern, wherein the formed first shape pattern includes the at least one initial geometric shape and the at least one anchor so added, wherein a first anchor of the at least one anchor of the first shape pattern comprises a first extension, a first flare, and a second flare, wherein the first extension extends a first portion of the at least one initial geometric shape in a first direction, wherein the first flare and the second flare are disposed on opposite sides of the first portion, wherein the first flare extends the first portion in a second direction that is perpendicular to the first direction, wherein the second flare extends the first portion in a third direction that is opposite the second direction and perpendicular to the first direction, wherein a second anchor of the at least one anchor of the first shape pattern consists of a second extension and a third flare, wherein the second extension extends a second portion of the at least one initial geometric shape

in the first direction, and wherein the third flare extends the second portion in the third direction, wherein a third anchor of the at least one anchor of the first shape pattern consists of a fourth flare disposed on a third portion of the at least one initial geometric shape;

forming a second shape pattern, wherein the second shape pattern consists of all of the first shape pattern and error shapes, wherein said forming the second shape pattern comprises forming a first error shape by moving the second portion in the second direction, wherein said forming the second shape pattern further comprises simultaneously forming a second error shape and a third error shape of the error shapes by shifting the third portion together with the fourth flare in a fourth direction that is opposite the first direction, wherein the second error shape and the third error shape have a same thickness in the fourth direction, wherein the second error shape is an additive error shape that physically exists in the second shape pattern, and wherein the third error shape is a subtractive error shape that logically exists in the second shape pattern;

extracting the error shapes from the second shape pattern;

deriving from a subset of the extracted error shapes at least one environment shape corresponding to each error shape in the subset of the error shapes, said environment shape reflecting a local geometric environment of its corresponding error shape;

deleting a subset of the environment shapes such that only a plurality of unique environment shapes satisfying a selection criterion remain subject to the remaining unique environment shapes differing from each other with respect to a geometrical characteristic of their respective geometric shapes, wherein each error shape in the subset has a polygonal shape;

wherein the deriving step comprises: expanding each error shape in the subset to form a corresponding expanded shape, and forming the at least one environment shape corresponding to

each expanded shape by removing all portions of the expanded shape which are common to the second shape pattern;

wherein expanding the first error shape to form a corresponding first expanded shape comprises outwardly projecting each bounding side of the first error shape by a distance in a direction perpendicular to the bounding side;

wherein said forming the at least one environment shape comprises forming a first environment shape and a second environment shape corresponding to the first expanded shape by removing all portions of the first expanded shape which are common to the second shape pattern, wherein the formed first environmental shape is a polygon of 12 sides and is in direct mechanical contact with the second extension and the third flare, wherein the formed second environmental shape is a rectangle and is in direct mechanical contact with the third flare, and wherein the third flare is disposed between the first and second environmental shapes and separates the first and second environmental shapes from each other.